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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,399	07/24/2007	Soon-Tae Ahn	SAMH100002000	8173

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EXAMINER

KESSLER, CHRISTOPHER S

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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12/21/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,399	Applicant(s) AHN, SOON-TAE	
	Examiner CHRISTOPHER KESSLER	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/2/09</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "rapidly heating" in claim 3 is a relative term which renders the claim indefinite. The term "rapidly heating" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. There is no direction to one of ordinary skill in the art as to what rate of heating constitutes "rapidly" heating.

Claim 4 is dependent on claim 3 and is therefore also indefinite. The examiner notes that the relative terms "low temperature" and "excellent low temperature impact properties" are described in the specification (pp. 5-6) and are interpreted to mean -40°C and at least 60 J/cm² at -40°C, respectively.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by US PG Pub 2002/0040744 issued to Kanisawa et al. (hereinafter “Kanisawa”).

Regarding claim 1, Kanisawa teaches the invention as claimed. Kanisawa teaches a steel wire (in rod form) for cold forging (see p. 2). Kanisawa teaches that the wire is quenched and tempered as is known in the art, and that the prior austenite grain size should be Japanese standard JIS G 0551 size 11 or greater (see [0041]). The broad austenite grain size of Kanisawa substantially overlaps the claimed range.

More specifically, Kanisawa teaches examples of as rolled steel wire meeting the limitations as claimed. Kanisawa teaches that wire rod is heated above Ar_3 , quenched, and tempered for 30 min at 500°C (see EXAMPLE 1, and Table 2). Kanisawa teaches an example comprising 0.4% C, 0.24% Si, 0.68% Mn, 0.011% P, and 0.010% S (see Steel No. B, Table 1). The composition of the steel falls inside the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03. Kanisawa teaches that the steel has a prior austenite grain size of 11.8 (or about 6 μm ; see Table 3), said size falling within the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03. Kanisawa teaches that the steel has a tensile

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strength of 765 Mpa (about 78 kgf/mm²; see Table 3), said size falling within the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03.

Kanisawa does not teach that the impact absorption energy of the wire is at least 60J/cm² at -40°C. Kanisawa does not describe the impact absorption energy of the wire at all. However, the impact absorption energy of the wire of at least 60J/cm² at -40°C would have been an inherent property of the wire, because the wire had the same composition, prior austenite grain size, tempering parameter, and yield strength as claimed. The identical composition of wire processed in the same manner would have to have the same properties as the wire claimed. Applicant is further directed to MPEP 2112.01.

Regarding claim 2, Kanisawa teaches that the wire may further comprise one or more of Cr, Mo or B in the amounts as claimed (see [0052]-[0058]). More specifically, Kanisawa teaches an example of a steel wire with 0.25% C, 0.26% Si, 0.35% Mn, 0.01% P, 0.009% S and 0.0018% B (see Steel No. H, Table 1). The composition of the steel falls inside the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03. Kanisawa teaches that the steel has a prior austenite grain size of 11.5 (or about 6.7 μm; see Table 3), said size falling within the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03. Kanisawa teaches that the steel has a tensile strength of 824 Mpa (about 84 kgf/mm²; see Table 3), said size falling within the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03.

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Kanisawa does not teach that the impact absorption energy of the wire is at least $60\text{J}/\text{cm}^2$ at -40°C . Kanisawa does not describe the impact absorption energy of the wire at all. However, the impact absorption energy of the wire of at least $60\text{J}/\text{cm}^2$ at -40°C would have been an inherent property of the wire, because the wire had the same composition, prior austenite grain size, tempering parameter, and yield strength as claimed. The identical composition of wire processed in the same manner would have to have the same properties as the wire claimed. Applicant is further directed to MPEP 2112.01.

Regarding claim 3, Kanisawa teaches the method as claimed. Kanisawa teaches a method of making a steel wire (in rod form) for cold forging (see p. 2). Kanisawa teaches that wire rod is heated above A_{r3} , quenched, and tempered for 30 min at 500°C (see EXAMPLE 1, and Table 2). Thus, the tempering parameter of the method of Kanisawa $P = 1.8 \times (500 + 273) \times (14.44 + \log 1800) = 24,621$, said parameter falling within the range as claimed, anticipating the range. Applicant is further directed to MPEP 2131.03.

Regarding the limitations of the steel wire produced by the process (impact absorption energy, tensile strength, prior austenite grain size), Kanisawa is applied to the claim as stated above (see EXAMPLE 1 and Tables 1-3).

Regarding claim 4, Kanisawa is applied to the claim as stated above.

Conclusion

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. 2003/0075250 teaches overlapping composition of steel wire with overlapping tempering conditions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

csk